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Motion of a Particle During Nonlinear gas Oscillations Through an Open Pipe in an Unstressed-Wave Regime

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Abstract

© 2015 Springer Science+Business Media New York The motion of a plane particle in a pipe and in an external field near the open end of the pipe in the case of forced longitudinal oscillations of a gas in an unstressed-wave regime is investigated experimentally. The time dependences of the particle coordinate for various amplitudes and frequencies of excitation are obtained. It is shown that near a piston the particle moves toward the open end of the pipe, whereas near the open end it moves toward the piston and executes longitudinal oscillations. Outside the pipe, the particle moves from the open end into the external wave field virtually without oscillations. The position inside the pipe where the particle executes oscillations according to the harmonic law with no drift to any side along the axis has been determined.

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Keywords

experiment, external wave field, forced longitudinal oscillations, resonances, spherical particle